Installation Instructions

PanelView Plus and PanelView Plus Compact 400 and 600 Terminals

Catalog Numbers 2711P-x4xxxx, 2711P-x6xxxx, 2711PC-x4xxxx, 2711PC-x6xxxx

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About This Publication

This document provides instructions on how to install these devices in a panel:

- PanelView Plus 400 keypad terminal or keypad and touch terminal
- PanelView Plus 600 keypad, touch, or keypad and touch terminal
- PanelView Plus Compact 400 keypad terminal or keypad and touch terminal
- PanelView Plus Compact 600 touch terminal

For complete information on installing, wiring, and troubleshooting the terminals, refer to the publications listed under Additional Resources.

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://literature.rockwellautomation.com) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

WARNING	Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
ATTENTION	Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard and recognize the consequences.
SHOCK HAZARD	Labels may be on or inside the equipment (for example, a drive or motor) to alert people that dangerous voltage may be present.
BURN HAZARD	Labels may be on or inside the equipment (for example, a drive or motor) to alert people that surfaces may reach dangerous temperatures.

Environment and Enclosure

ATTENTION

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC 60664-1), at altitudes up to 2000 m (6561 ft) without derating.

The terminals are intended for use with programmable logic controllers. Terminals that are AC powered must also be connected to the secondary of an isolating transformer.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

Korean Radio Wave Suitability Registration - This equipment is registered for Electromagnetic Conformity Registration as business equipment (A), not home equipment. Sellers or users are required to take caution in this regard.

This equipment is supplied as open-type equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool. The terminals meet specified NEMA Type and IEC ratings only when mounted in a panel or enclosure with the equivalent rating. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

In addition to this publication, see:

- Industrial Automation Wiring and Grounding Guidelines, for additional installation requirements, publication 1770-4.1.
- NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure.

ControlNet Communication Ports

ATTENTION

PanelView Plus terminals with ControlNet communications ports include a Network Applications Port (NAP). This port is for temporarily connecting programming terminals to devices on a ControlNet network, and are not intended for continuous operation.

Hazardous Locations

This equipment is suitable for these locations:

- Class I, Division 2 Groups A, B, C, D
- Class II, Division 2 Groups F, G
- Class III
- Ordinary non-hazardous locations only

The following statement applies to use in hazardous locations.

WARNING

Explosion Hazard

- Substitution of components may impair suitability for hazardous locations.
- Do not disconnect equipment unless power has been switched off and area is known to be non-hazardous.
- Do not connect or disconnect components unless power has been switched off.
- All wiring must comply with N.E.C. articles 501, 502, 503, and/or C.E.C. section 18-1J2 as appropriate.
- Peripheral equipment must be suitable for the location in which it is used.

The terminals have a temperature code of T4 when operating in a 55 °C (131 °F) maximum ambient temperature. Do not install the terminals in environments where atmospheric gases have ignition temperatures **less** than 135 °C (275 °F).

Environnements dangereux

Cet équipement ne peut être utilisé que dans les environnements suivants :

- Classe I, Division 2, Groupes A, B, C, D ;
- Classe II, Division 2, Groupes F, G ;
- Classe III ;
- ou environnements non-dangereux.

La mise en garde suivante s'applique à une utilisation en environnement dangereux.

WARNING

DANGER D'EXPLOSION

- La substitution de composants peut rendre cet équipement impropre à une utilisation en environnement dangereux.
- Ne pas déconnecter l'équipement sans s'être assuré que l'alimentation est coupée ou que l'environnement est classé non dangereux.
- Ne pas connecter ou déconnecter des composants sans s'être assuré que l'alimentation est coupée.
- L'ensemble du câblage doit être conforme, selon le cas, aux articles 501-4(b), 502-4(b) et 503-3(b) du Code national de l'électricité des Etats-Unis.
- L'équipement périphérique doit être adapté à l'environnement dans lequel il est utilisé.

Le code de température de fonctionnement des terminaux PanelView Plus est T4 pour une température ambiante maximale de 55 °C. N'installez pas les terminaux dans des environnements contenant des gaz atmosphériques inflammables à **moins** de 135 °C.

USB Ports

The PanelView Plus and PanelView Plus Compact terminals contain a single, universal serial bus (USB) port that comply with hazardous location environments. This section details the field wiring compliance requirements and is provided in accordance with the National Electrical Code, article 500.

400 and 600 Terminals Control Drawing

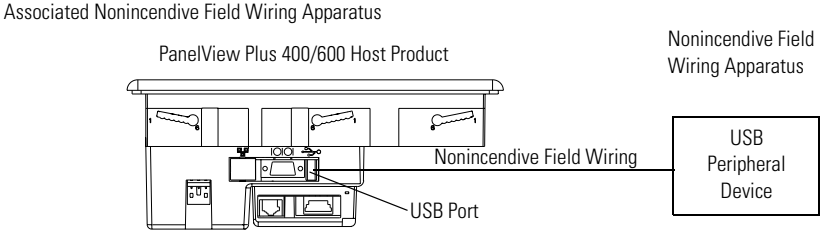


Table 1 - 400 and 600 USB Port Circuit Parameters

400 and 600 Terminals	V_{oc}	I_{sc}	C_a		L_a	
			Groups A and B	Groups C and D	Groups A and B	Groups C and D
Series A and B	5.25V DC	1.68 A	10 µF	10 µF	15 µH	15 µH
Series C or later	5.25V DC	1.68 A	10 µF	10 µF	3.5 µH	15 µH

Selected nonincendive field wiring apparatus must have nonincendive circuit parameters conforming with Table 2.

Table 2 - Required Circuit Parameters for the USB Peripheral Device

V_{max}	≥	V_{oc}
I_{max}	≥	I_{sc}
$C_i + C_{cable}$	≤	C_a
$L_i + L_{cable}$	≤	L_a

Application Information

Per the National Electrical Code the circuit parameters of nonincendive field wiring apparatus for use in hazardous locations shall be coordinated with the associated nonincendive field wiring apparatus such that their combination remains nonincendive. The 400 and 600 terminals and the USB peripheral device shall be treated in this manner.

The circuit parameters of the 400 and 600 USB port are given in Table 1. The USB peripheral device and its associated cabling shall have circuit parameters with the limits given in Table 2 for them to remain nonincendive when used with the 400 and 600 USB port. If cable capacitance and inductance are not known the following values from ANSI/ISA-RP 12.06.01-2003 may be used:

C_{cable} = 197 μF/m (60 μF/ft)
L_{cable} = 0.7 μF/m (0.20 μH/ft)

Nonincendive field wiring must be wired and separated in accordance with 501.10(B)(3) of the National Electrical Code (NEC) ANSI/NFPA 70 or other local codes as applicable.

This associated nonincendive field wiring apparatus has not been evaluated for use in combination with another associated nonincendive field wiring apparatus.

Symbol Definitions

V_{oc}	Open circuit voltage of the host USB port.
I_{sc}	Maximum output current of the host USB port.
V_{max}	Maximum applied voltage rating of the USB peripheral device. V_{max} shall be greater than or equal to V_{oc} in Table 1 ($V_{max} \geq V_{oc}$).
I_{max}	Maximum current to which the USB peripheral device can be subjected. I_{max} shall be greater than or equal to I_{sc} in Table 1 ($I_{max} \geq I_{sc}$).
C_i	Maximum internal capacitance of the USB peripheral device.
C_a	Maximum allowed capacitance of the USB peripheral device and its associated cable. The sum of C_i of the USB peripheral device and C_{cable} of the associated cable shall be less than or equal to C_a ($C_i + C_{cable} \leq C_a$).
L_i	Maximum internal inductance of the USB peripheral device.
L_a	Maximum allowed inductance of the USB peripheral device and its associated cable. The sum of L_i of the USB peripheral device and L_{cable} of the associated cable shall be less than or equal to L_a ($L_i + L_{cable} \leq L_a$).

Wiring and Safety Guidelines

Use publication NFPA 70E, Electrical Safety Requirements for Employee Workplaces, IEC 60364 Electrical Installations in Buildings, or other applicable wiring safety requirements for the country of installation when wiring the devices. In addition to the NFPA guidelines:

- connect the device and other similar electronic equipment to its own branch circuit.
- protect the input power by a fuse or circuit breaker rated at no more than 15 A.
- route incoming power to the device by a separate path from the communication lines.
- cross power and communication lines at right angles if they must cross. Communication lines can be installed in the same conduit as low-level DC I/O lines (less than 10V).
- shield and ground cables appropriately to avoid electromagnetic interference (EMI). Grounding minimizes noise from EMI and is a safety measure in electrical installations.

For more information on grounding recommendations, refer to the National Electrical Code published by the National Fire Protection Association.

For more information on terminal wiring and grounding applications, refer to publication 2711P-TD001. You can find this publication in the Literature Library at http://literature.rockwellautomation.com.

About the Product

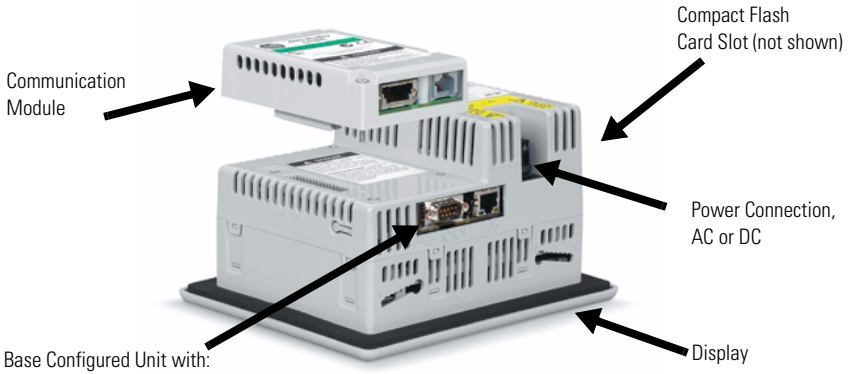
The base configured unit of the PanelView Plus 400 and 600 terminals includes these components:

- Power supply, AC or DC
- Display with keypad, touch screen, or keypad and touch screen
- Processor and memory
- RS-232 and USB ports only **or**
- RS-232, USB, and Ethernet ports with interface for communication module

The fixed configuration of the PanelView Plus Compact 400 and 600 terminals includes these components:

- Power supply, DC
- Display with keypad, touch screen, or keypad and touch screen
- Processor and memory
- RS-232, USB, and Ethernet ports without interface for communication module

Communication modules for specific protocols can be ordered as separate components for field installation or factory assembled to base unit (with communication interface) per your configuration.



Base Configured Unit with:

- USB and RS-232 Ports Only
- USB, RS-232, and Ethernet Ports **or**
- USB, RS-232, and Ethernet Ports with Interface for Communication Module.

IMPORTANT When using the DH-485 module, catalog number 2711P-RN3, with PanelView Plus 400 and 600 terminals, the cable length must not exceed 30 m (98 ft) to comply with CE requirements. For longer cable lengths, use the 1761-NET-AIC or 1747-AIC module.

Parts List

The terminals are shipped with these items:

- Power terminal block, AC or DC
- Mounting clips
- Installation instructions and panel cutout

Required Tools

These tools are required for installation:

- Panel cutout tools
- Small, slotted screwdriver for securing power and RS-232 port connections

Install the Terminal

Before installing the terminal in a panel, review these topics:

- Mounting clearances
- Panel cutout dimensions
- Product dimensions

Mounting Clearances

Allow adequate clearance around the terminal, inside the enclosure, for adequate ventilation. Consider heat produced by other devices in the enclosure. The ambient temperature around the terminals must be between 0…55 °C (32…131 °F).

Minimum clearances for ventilation are:

- Top clearance: 51 mm (2 in.)
- Bottom clearance: 102 mm (4 in.)
- Side clearances: 25 mm (1 in.)
- Back clearance: 0 mm (0 in.)

Minimum side clearance for insertion of memory card is 102 mm (4 in.).

Panel Cutout Dimensions

Use the full size template shipped with your terminal to mark the cutout dimensions.

Terminal Type	Height, mm (in.)	Width, mm (in.)
400 Keypad or Keypad and Touch	123 (4.86)	156 (6.15)
600 Keypad or Keypad and Touch	142 (5.61)	241 (9.50)
600 Touch	123 (4.86)	156 (6.15)

Mount the Terminal in a Panel

Mounting levers secure the terminal to the panel. The number of levers you use (4 or 6) varies by terminal type.

ATTENTION

Disconnect all electrical power from the panel before making the panel cutout.

Make sure the area around the panel cutout is clear.

Take precautions so metal cuttings do not enter any components already installed in the panel.

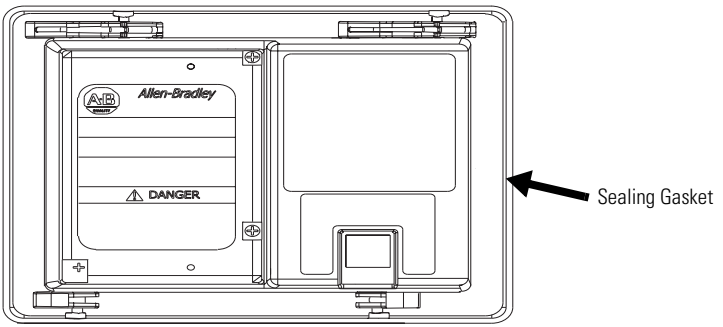
Failure to follow these instructions may result in personal injury or damage to panel components.

Follow these steps to mount the terminal in a panel.

1. Cut an opening in the panel using the panel cutout that shipped with the terminal.
2. If a communication module is ordered separately, attach the module to the base unit before panel installation.

   Refer to the instructions shipped with the module.

3. Make sure the terminal sealing gasket is properly positioned on the terminal. This gasket forms a compression type seal. Do not use sealing compounds.



4. Install legend strips before installing the terminal if you are using keypad legend strips on 600 keypad terminals.

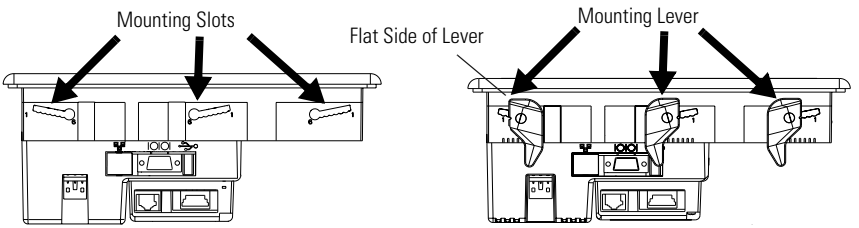
   Be careful not to pinch legend strip during installation.

5. Place the terminal in the panel cutout.

   If you are mounting the terminal in an existing 550 panel cutout, align the terminal with the center of cutout for adequate gasket sealing.

6. Insert all mounting levers into the mounting slots on the terminal.

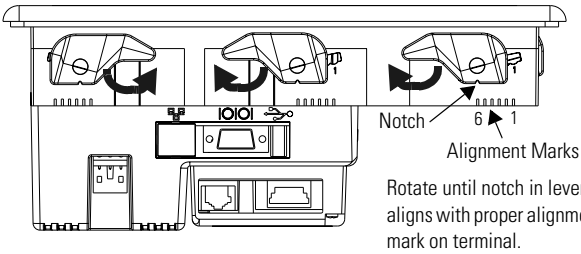
   Slide each lever until the flat side of lever touches the surface of the panel.

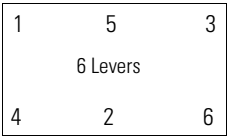


7. When all levers are in place, slide each lever an additional notch or two until you hear a click.

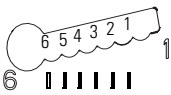
8. Rotate each lever in the direction indicated until it is in the final latch position.

   Follow the latching sequence for the optimum terminal fit.





Use the table as a guide to provide an adequate gasket seal between the terminal and the panel.

Terminal Markings for Alignment	Lever Position	Panel Thickness Range	Typical Gauge
	1	1.52…2.01 mm (0.060…0.079 in.)	16
	2	2.03…2.64 mm (0.080…0.104 in.)	14
	3	2.67…3.15 mm (0.105…0.124 in.)	12
	4	3.17…3.66 mm (0.125…0.144 in.)	10
	5	3.68…4.16 mm (0.145…0.164 in.)	8/9
	6	4.19…4.75 mm (0.165…0.187 in.)	7

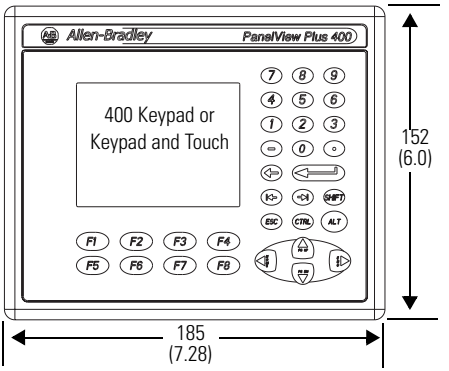
ATTENTION

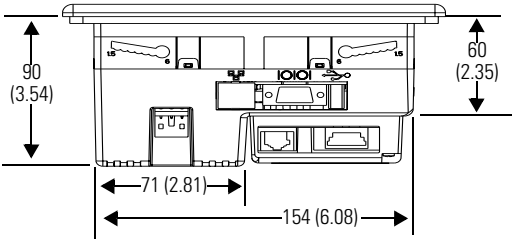
Follow the instructions to provide a proper seal and to prevent potential damage to the terminal. Rockwell Automation assumes no responsibility for water or chemical damage to the terminal or other equipment within the enclosure because of improper installation.

Product Dimensions

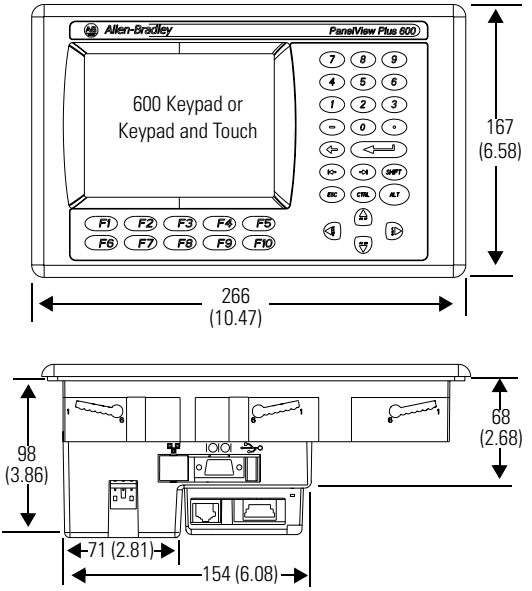
The illustrations show approximate product dimensions for the PanelView Plus and PanelView Plus Compact 400 and 600 terminals. Measurements are in mm (in.).

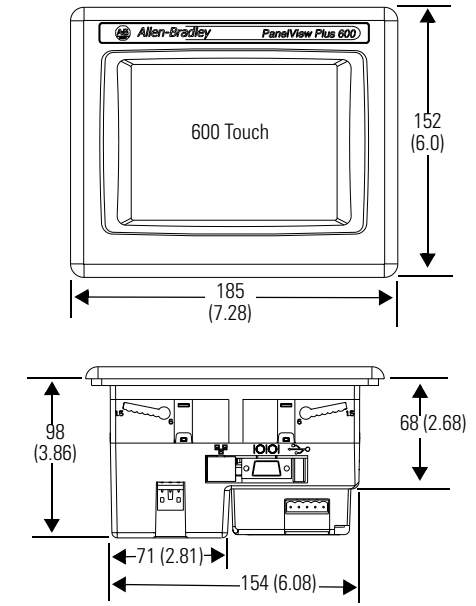
400 Terminal Dimensions





600 Terminal Dimensions





Remove and Install the Power Terminal Block

The terminals ship with a power block installed. You can remove the power terminal block for ease of installation, wiring, and maintenance.

WARNING

Explosion Hazard

Substitution of components may impair suitability for hazardous locations.

Do not disconnect equipment unless power has been switched off and area is known to be non-hazardous.

Do not connect or disconnect components unless power has been switched off.

All wiring must comply with N.E.C. articles 501, 502, 503, and/or C.E.C. section 18-1J2 as appropriate.

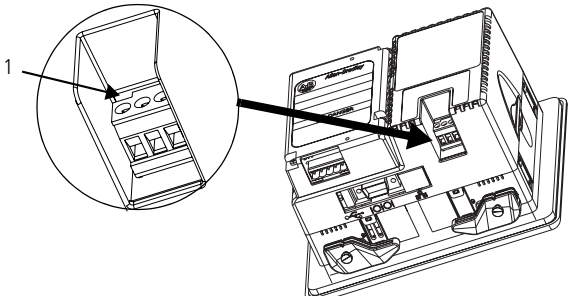
Peripheral equipment must be suitable for the location in which it is used.

ATTENTION

Disconnect all power before installing or replacing components. Failure to disconnect power may result in electrical shock or damage to the terminal.

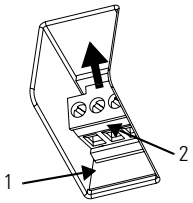
Follow these steps to remove the terminal block.

1. Insert the tip of small, flat-blade, screw driver into terminal block access slot.
2. Gently pry terminal block away from terminal to release locking mechanism.



Follow these steps to replace the terminal block.

1. Press terminal block base in first with the block leaning outward.
2. Gently push the top of terminal block back to vertical position to snap in locking tab.



DC Power Connections

PanelView Plus devices with an integrated, nonisolated, DC power supply have these power ratings:

- 24V DC nom (18…30V DC)
- 25 W max (1.0 A at 24V DC)

The power supply is internally protected against reverse polarity of the DC+ and DC- connections. Connecting DC+ or DC- source to the functional earth terminal may damage the device.

The input power terminal block is removable and supports these wire sizes.

Wire Specifications for DC Input Power Terminal Block

Wire Type		Dual-wire Gauge (1)	Single-wire Gauge	Terminal Screw Torque
Stranded or solid	Cu 90 °C (194 °F)	0.33…1.31 mm^2 (22…16 AWG)	0.33…2.08 mm^2 (22…14 AWG)	0.45…0.56 N•m (4…5 lb•in)

(1) Two-wire maximum per terminal.

The non-isolated power supply does not provide galvanic isolation. A Class 2 Safety Extra-Low Voltage (SELV) isolated power supply with a 24V DC nominal output voltage is required to power the terminal.

External Power Supply

Use a single, 24V DC power supply to power each PanelView Plus terminal, such as catalog number 2711P-RSACDIN. Using a separate, isolated, and ungrounded source to power each terminal prevents ground loop currents from damaging the terminals.

The output on the power supply must be isolated from the input and not connected to earth ground.

ATTENTION

Use a Class 2 or SELV power supply as required by local wiring codes for your installation. These power supplies provide protection so that under normal and single-fault conditions, the voltage between the conductors, and between conductors and functional earth or protective earth does not exceed a safe value.

Functional Earth Connection

PanelView Plus devices with a DC power input have a functional earth terminal that you must connect to a low-impedance earth ground. The functional earth connection is on the power input terminal block.

IMPORTANT The functional earth connection to ground is mandatory. This connection is required for noise immunity, reliability, and Electromagnetic Compliance (EMC) with the European Union (EU) EMC directive for CE-mark conformance.

The functional earth terminal wiring requires a minimum wire gauge.

Functional Earth Wire Specifications for DC Power

Wire Type		Wire Gauge	Terminal Screw Torque
Stranded or solid	Cu 90 °C (194 °F)	2.08... 3.31 mm^2 (14…12 AWG)	0.45…0.56 N•m (4…5 lb•in)

On most PanelView Plus devices, the functional earth terminal is internally connected to the DC- terminal within the product.

ATTENTION Damage or malfunction can occur when a voltage potential exists between two separate ground points. Make sure the terminal does not serve as a conductive path between ground points at different potentials.

The PanelView Plus devices have isolated and nonisolated communication ports.

For more information on wiring and grounding, refer to publication 2711P-TD001 available at http://www.literature.rockwellautomation.com.

Connect DC Power

WARNING

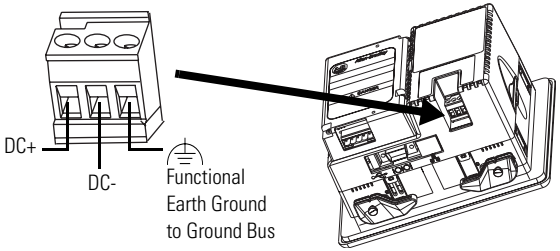
Explosion Hazard - Do not disconnect equipment unless power has been switched off and area is known to be nonhazardous.

Disconnect all power before installing or replacing components. Failure to disconnect power may result in electrical shock and/or damage to the terminal.

Follow these steps to connect DC power.

1. Disconnect power to the terminal.
2. Secure the DC power wires to the terminal block screws.

   Follow the markings on terminal blocks and terminal for proper connections.
3. Secure the functional earth ground wire to the functional earth ground terminal screw on the input power terminal block.



4. Apply 24V DC power to the terminal.

AC Power Connections

The 400 to 600 terminals with an integrated AC power supply have these power ratings:

- 85…264V AC (47…63 Hz)
- 60V A maximum

The input power terminal block is removable and supports these wire sizes.

Wire Specifications for AC Input Power Terminal Block

Wire Type		Dual-wire Gauge (1)	Single-wire Gauge	Terminal Screw Torque
Stranded or solid	Cu 90 °C (194 °F)	0.33…1.31 mm^2 22…16 AWG	0.33…2.08 mm^2 22…14 AWG	0.45 …0.56 N•m (4…5 lb•in)

(1) Two-wire max. per terminal.

Protective Earth Connection

PanelView Plus AC terminals have a protective earth ground terminal that you must connect to a low-impedance earth ground.

ATTENTION

The protective earth connection is required for both electrical safety and Electromagnetic Compliance (EMC) with the EU (European Union) EMC directive for CE-mark conformance.

The terminals have the protective earth ground connection on the power input terminal block. The protective earth terminal wiring requires a minimum wire gauge.

Protective Earth Wire Specifications for AC Power

Wire Type		Wire Gauge	Terminal Screw Torque
Stranded or solid	Cu 90 °C (194 °F)	2.08…3.31 mm^2 (14…12 AWG)	0.45…0.56 N•m (4…5 lb•in)

Connect AC Power

WARNING

Explosion Hazard - Do not disconnect equipment unless power has been switched off and area is known to be nonhazardous.

Disconnect all power before installing or replacing components. Failure to disconnect power may result in electrical shock and/or damage to the terminal.

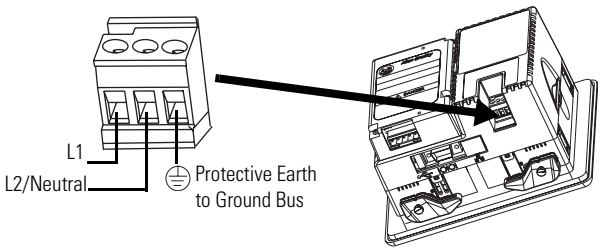
ATTENTION

Improper wiring of power terminals may result in voltage at the communication connector shells. Refer to the following figure when wiring.

Do not apply power to the terminal until all wiring connections have been made. Failure to do so may result in electrical shock.

Follow these steps to connect AC power.

1. Disconnect power from the terminal.
2. Secure the AC power wires to the terminal block screws.
3. Secure the protective earth ground wire to the protective earth ground terminal screw on the input terminal block.



4. Apply AC power to the terminal.

Troubleshooting

If the terminal is not operating correctly, check the power, display settings, status indicators, and review the system startup and error messages.

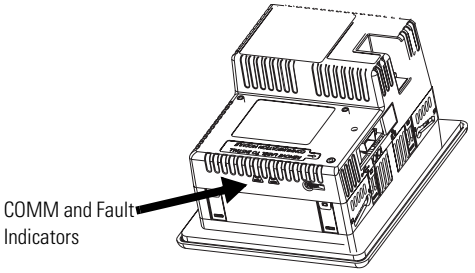
Check for Adequate Power

A terminal that does not receive adequate power could cause unpredictable behavior. Verify the power requirements in the Specifications table.

Check the Status Indicators

The terminal has two status indicators to isolate operating problems.

- COMM indicator (green) for communications
- FAULT indicator (red) for hardware faults



When the terminal starts up, the fault indicator should be off, except for a few brief flashes, and the comm indicator on. If the indicators remain off, check the power cable.

After a successful startup, both indicators are off and controlled by the application running on the terminal.

The table shows indicator states if the terminal powers on and stops during startup.

Indicator States If the Terminal Stops During Startup

Fault (Red) Indicator	Comm (Green) Indicator	Description
Blinking[1]	Off	Last firmware download failed. Reload firmware using Firmware Upgrade Wizard (FUW) utility.
	Blinking	EBC boot loader firmware failed or is missing. Reload firmware using Firmware Upgrade Wizard (FUW) utility.
	On	Windows CE OS firmware failed or is missing. Reload firmware using Firmware Upgrade Wizard (FUW) utility.
On[2]	Off	Fatal hardware error occurred. Replace the terminal.
	Blinking	Fatal hardware error in display. Replace the terminal.

(1) Blinking red indicates a recoverable error.

(2) Solid red indicates a nonrecoverable or fatal error.

Check the Display

If the terminal display is dim or unreadable:

- check the brightness setting. From terminal Configuration mode, choose Terminal Settings>Display Intensity.
- check the contrast setting. From terminal Configuration mode, choose Terminal Settings>Display Contrast.
- check the Screen Saver settings. The backlight may turn off or dim the display unexpectedly. From terminal Configuration mode, choose Terminal Settings>Display>Screen Saver.

Startup Information Messages

Startup information messages display in a specific sequence on the terminal screen during startup and typically display for a few seconds. These messages do not require that you perform any action.

Message #	Message	Description
30	Watchdog Test	Tests the watchdog circuitry to verify system integrity.
1	RAM Test	Tests the RAM memory.
2	Image Search	Checks for new OS firmware upgrade on the external compact flash card and the serial port.
11	Downloading Image	Transfers a new OS firmware upgrade to internal RAM. Message may remain on screen for several minutes.
20	Transfer Image	Programs the OS firmware just downloaded into RAM. Message may remain on screen for several minutes.
24	CRC Check	Checks the integrity of the OS firmware.
27	Decompress System	Decompresses the compressed OS firmware into RAM.
28	Starting System	Launches the operating system (OS).
29	System Check ###	Internal file system integrity check (### is percent progress indicator).
29.1	System Check	Internal file system check disabled. Contact technical support.

Startup Error Messages

When an error occurs, the terminal displays an error number with a text message. The word ERROR! appears under the message in different languages.

Displayed Message
ERROR! FEHLER! ERREUR! ERRORE!

Error #	Message	Description	Recommended Corrective Action
1	RAM Test	RAM test failure.	Reset the terminal. If error persists, replace the terminal.
14	RAM Header Check	OS firmware that is downloading is not compatible with hardware.	Check that you are using the correct version and type of firmware upgrade. Reset the terminal and upgrade with the correct firmware version.
20	Transfer Image	Programming the downloaded OS firmware into Flash failed.	Reset the terminal and attempt the firmware upgrade again. If error persists, replace the terminal.
23	Download Task	OS firmware that is downloading to the terminal is too large.	Check that you are using the correct version and type of firmware upgrade. Reset the terminal and upgrade with the correct firmware version.
24	CRC Check	Checksum of the OS firmware failed.	Reload the firmware. If error persists, replace the terminal.
25	Invalid Prod Family	OS firmware that is downloading is not compatible with terminal.	Check that you are using the correct version and type of firmware upgrade. Reset the terminal and upgrade with the correct firmware version.
27	Decompress System	Error decompressing the OS firmware from flash to RAM.	Reload the firmware. If error persists, replace the terminal.
30	Watchdog Test	Watchdog test failure.	Reload the firmware. If error persists, replace the terminal.
31	Stuck Key	Function key failure.	Check that nothing is pressed against a key. Reset the terminal without key presses. If error persists, replace the terminal.
3a	Stuck Touch	Touch screen failure.	Check that nothing is pressed against the touch screen. Reset the terminal without touch screen presses. If error persists, replace the terminal.
40	EXE Check	System OS firmware is missing or corrupt.	Reload the firmware. If error persists, replace the terminal.

Battery Removal

The 400 and 600 terminals contain a lithium battery that is permanently connected and should be removed only by trained professionals.

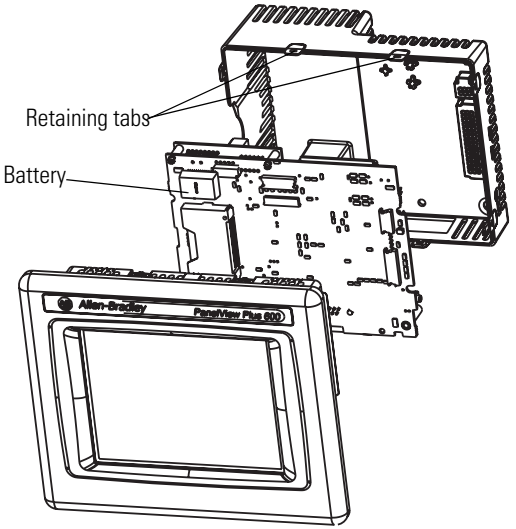
This product contains a hermetically sealed lithium battery which may need to be replaced during the life of the product.

At the end of its life, the battery contained in this product should be collected separately from any unsorted municipal waste.

The collectioin and recyling of batteries helps protect the environment and contributes to the conservation of natural resources as valuable materials are recovered.

Follow these steps to remove the battery on the 400 and 600 terminals.

1. Disconnect power from the terminal.
2. Place the terminal, display side down, on a flat stable surface.
3. Detach the communication module, if attached, from the logic module by removing the three screws.
4. Unlatch the eight retaining tabs (two on each side) on the back cover and remove cover.
5. Locate the yellow battery on the logic board.
6. Remove the battery.



Specifications

PanelView Plus and PanelView Plus Compact 400 and 600 Terminals

Attribute	Value
Display	
400 and 600 grayscale display 400 and 600 color display	Grayscale passive matrix, film compensated super-twist nematic (FSTN) LCD technology Color active matrix, thin film transistor (TFT) LCD technology
Display size, Approx., diagonal 400 grayscale display 400 color display 600 grayscale/color display	 95 mm (3.7 in.) 89 mm (3.5 in.) 139 mm (5.5 in.)
Display area (WxH), Approx. 400 grayscale display 400 color display 600 grayscale/color display	 77 x 58 mm (3.0 x 2.3 in.) 71 x 53 mm (2.8 x 2.1 in.) 112 x 84 mm (4.4 x 3.3 in.)
Display resolution 400 grayscale/color display 600 grayscale/color display	 320 x 240 320 x 240
Backlight 400 grayscale/color display 600 grayscale/color display	 LED CCFL 50,000 hours life, min.
Touch Screen	
Touch screen	Analog resistive
Actuating rating	1 million presses
Operating force	10…110 g
Keypad	
Function keys	8 or 10 function, numeric and navigation keys
Actuation rating	1 million presses
Operating force	340 g
Electrical	
Input voltage, DC Power consumption, DC	24V DC nom (18…30V DC) 25 W max (1.0 A @ 24V DC)
Input voltage, AC Power consumption, AC	85…264V AC, 47…63 Hz 60V A max

PanelView Plus and PanelView Plus Compact 400 and 600 Terminals

Dimensions (HxWxD), approx.	
400 keypad, or keypad and touch	152 x 185 x 90 mm (6.0 x 7.28 x 3.54 in.)
600 keypad, or keypad and touch	167 x 266 x 98 mm (6.58 x 10.47 x 3.86 in.)
600 touch	152 x 185 x 98 mm (6.0 x 7.28 x 3.86 in.)
Weight, approx.	
400 keypad [(1)], or keypad and touch	635 g (1.40 lb)
600 keypad, or keypad and touch [(1)]	930 g (2.05 lb)
600 touch [(1)]	789 g (1.74 lb)
General	
Battery life	5 year min at 77 °F (25 °C)
Clock	Battery backup, + /- 2 minutes per month
Status indicators	COMM (Green), Fault (Red)
Application flash memory	20 MB
External compact flash storage	512 MB max

(1) Add approximately 95 g (0.21 lb) for communication module.

Environmental Specifications

Attribute	**Value**
Temperature, operating	0…55 °C (32…131 °F)
Temperature, storage	-25…70 °C (-13…158 °F)
Heat dissipation	80 BTU/hr
Altitude, operating	2000 m (6561 ft)
Vibration	10…57 Hz, 0.012 pk-pk displacement 57…500 Hz 2.0 g pk acceleration
Shock, operating	15 g at 11 ms
Shock, nonoperating	30 g at 11 ms
Relative humidity	5…95% without condensation
Enclosure ratings	NEMA Type 12, 13, 4X (indoor use only), IP54, IP65

Certifications[1]

Certification	
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E10314. UL Listed Industrial Control Equipment for use in: • Class I, Div 2, Group A, B, C, D • Class II, Div 2 Groups F, G • Class III Hazardous Locations
CE (EMC)	European Union 2004/108/EC EMC Directive, compliant with: EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions
CE (LVD)	European Union 2006/95/EC Low Voltage Directive, compliant with: EN 61131-2; Programmable Controllers
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions

[1] See the Product Certification link on http://www.ab.com for declarations of conformity, certificates, and other certification details.

Additional Resources

For additional information on these products, refer to these publications.

Resource	Description
PanelView Plus User Manual, publication 2711P-UM001	Provides an overview of the PanelView Plus and PanelView Plus CE terminals and gives information on how to install, operate, configure, and troubleshoot these devices.
Wiring and Grounding Applications for PanelView Plus devices Technical Data, publication 2711P-TD001	Provides additional information on wiring and grounding the PanelView Plus and PanelView Plus CE terminals.

You can view or download publications and translated versions of the installation instructions at http://literature.rockwellautomation.com. To order paper copies of technical documentation, contact your local Rockwell Automation distributor or sales representative.

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://support.rockwellautomation.com, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://support.rockwellautomation.com.

Installation Assistance

If you experience a problem within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your product up and running.

United States	1.440.646.3434 Monday – Friday, 8 a.m. – 5 p.m. EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

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